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ALABAMA DEPARTMENT OF TRANSPORTATION
PROCEDURE FOR EVALUATION AND MAINTENANCE OF

LIST III-1

COATING SYSTEMS FOR STRUCTURAL STEEL

1. **Material:** Coating systems for structural steel.

2. **Specification:** Sections 521 and 855

3. **Jurisdiction:** Product Evaluation Board, Paint Laboratory

4. **Job Acceptance Requirements:** No Job Control samples required if material works satisfactorily. The coating systems listed have undergone an extensive field test to prove their long term performance. This does not insure batch to batch uniformity. If problems occur in the shop or field, the inspector should investigate and take samples.

5. **Project Engineer's Responsibility:** Check and assure that the materials are on the approved list. The project engineer should insure that materials are stored, mixed and applied correctly. These coatings are set up as systems of a prime, intermediate and topcoat. The project engineer should obtain written confirmation from the contractor stating the products selected from the specified system (i.e. if system 1A is specified on the plans, the contractor should designate whether he will use 1A-1, 1A-2, etc). He should then verify that the field applied coatings are from the same system as the shop applied coatings.

6. **Producer's Initial Requirements:**
Companies wishing to have products evaluated for placement on this list should furnish the Department's Product Evaluation Engineer with the following:

6.1 Name and address of the company producing the product

6.2 A standard material safety data sheet

6.4 A product data sheet with mixing instructions, application instructions and other pertinent information.

6.5 A minimum one-liter sample of each component for laboratory identification of the product.

6.6 Furnish sufficient materials and labor to install a field test as outlined in Section 9 below. (The requirement for the field test may be waived by the Department, if the coating system has undergone a similar test by an approved governmental agency in another state.)

6.3 Submittal and testing fees according to Department procedure BMTP-355.

7. **Producer's Maintenance Requirements:**
Companies with products on this list will be expected to comply with the following to stay on the list:

7.1 Produce the same quality of material as the material supplied for the original evaluation.

7.2 Provide only approved products to Department projects.

7.3 Promptly report to the Department any changes in company name, product name, company address or company ownership.

7.4 Notify the Department of any changes in production of the product. Any alteration that will change the product physically or chemically will require a reevaluation of the product.

7.5 Provide technical assistance to the Department and/or contractor concerning the application and safety of the product. This assistance may include visits to the application site if required by the Department. (Article 521.03 of the Standard Specifications)

8. **Laboratory Testing:** Routine laboratory tests will be conducted to fingerprint the products. When samples are taken in the field, they must be within the limits set below for the sample to be considered acceptable.

8.1 The infrared spectrum of the vehicle solids when prepared according to ASTM D 2621 or the polymers in emulsion paints prepared according to ASTM D 3168 must be a match of the original sample.

8.2 The viscosity of the mixed coating when tested according to ASTM D 562 must be within 10 Kreb units of the original sample

8.3 The mass per unit of the material when tested according to ASTM D 1475 must be within 100 grams per liter of the original sample.

8.4 Coatings that have a pot life must be within five minutes of the pot life of the original.

8.5 When tested according to ASTM D 2369 Procedure B, the Nonvolatile content and the

percent volatile of the coating must be within 5% of the original sample.

8.6 When tested according to ASTM D 1640, the set to touch and the dry through times must be within two minutes of the original drying times.

9. **Field Testing of Coatings:** Persons seeking approval of coating systems shall be responsible for the full installation of a field test on a structure specified by the Department. A structure near the Gulf Coast is used by the Department to simulate the most corrosive atmosphere found in Alabama. The test will follow the general guidelines as listed below. Variations may occur according to the availability of space at the original test site.

9.1 The test specimen shall be a standard girder and the connecting braces and stiffeners. Girders at the present test bridge are approximately 15 meters in length and 1 meter in height to yield approximately 30 to 50 square meters of surface to be prepared and coated. All labor, equipment and materials must be furnished by the manufacturer of the coating system. Clean-up of all waste generated by the installation is also the responsibility of the producer of the coating.

9.2 The test girder shall be blast cleaned to a Steel Structures Painting Counsel SP-10 "Near White" finish. The finish shall be compared to an N.A.C.E. No. 2 visual standard TM-01-70 or equal to insure the near white condition. The blasted surface shall have an anchor pattern of0.025 to 0.075 µm. This shall be checked with a Press-O-Film replica tape or equal.

9.3 The entire test area shall be coated with a prime coat of the test paint. This will include the girder, stiffeners and one half the length of the connecting cross braces.

9.4 The intermediate coat, of three coat systems, shall be applied over 2/3 of the primed area leaving 1/3 of the prime exposed. This coat shall be a color that contrasts both the prime and top coats.

9.5 System three paints will use only two coats. All blasted areas will receive one coat of the epoxy mastic paint. Then a top coat as recommended by the manufacturer, which will prevent UV degradation of the epoxy, shall be applied over 1/2 of the coated area leaving 1/2 of the epoxy mastic exposed.

9.6 Systems IA, IB and II shall have a topcoat applied over 1/2 of the area covered with the prime/intermediate coat combination. Finished specimen girders will have 1/3 prime coat, 1/3 intermediate coat and 1/3 top coat exposed to the elements.

9.7 All coats shall be applied at the thickness recommended in the manufacturers published literature. Dry film thickness shall be checked with a magnetic gage before the next coat is applied. The Department will average ten separate readings to decide the coating thickness. Any coating, over 0.050 µm outside the range, must be reworked before acceptance.

9.8 All topcoats shall be pigmented to match Federal Standard 595, Chip 24272

9.9 The Department will monitor all phases of the paint system installation for the field test. The paint system will then be checked periodically over the next three years. Any bubbling or appearance of non-uniformity after drying shall be cause for rejection of the paint system. Any cracking, peeling, or loss of adhesion shall be cause for rejection. Any break through rusting over 1 percent (ASTM-SSPC Color Photographic Standard No. 6) in any of the three coated areas shall be cause for rejection. (Rusting shall be evaluated according to ASTM D 610). If, after 18 months from the time of installation, the paint system shows no signs of the above mentioned deficiencies or any other unsatisfactory performance, the Research and Development Engineer will write a letter to the product evaluation Board recommending tentative approval for use of the paint system. If the Product evaluation Board approves the paint system for tentative use, the paint system will be added to List III-1 and labeled “TENTATIVE” under the “DATE APPROVED” column and can be used on projects. If, at any time during the first 18 months of installation, the paint system shows the above mentioned deficiencies or any other unsatisfactory performance, the Research and Development Engineer will write a letter to the Product Evaluation Board recommending the paint system for disapproval. If the Product Evaluation Board disapproves the paint system, the system cannot be resubmitted for approval.

9.9.1 If, within the final 18 months of the paint system field test, any of the above deficiencies or any unsatisfactory performance are encountered in the paint system, the Research and Development Engineer will write a letter to the Product Evaluation Board recommending disapproval of the paint system. If the Product Evaluation Board disapproves the paint system, the paint system will be removed from List III-1 of the Materials, Sources and Devices with Special Acceptance Requirements manual and can no longer be used on any Department projects. If the paint system performs in accordance to the requirements specified in this procedure and no other deficiencies are encountered for the three year period, the paint system will be recommended for permanent status by the

Research and Development Engineer to the Product Evaluation Board. If the Product evaluation Board approves the paint system for permanent status, the date approved by the Product evaluation Board will be reflected under the ”DATE APPROVED” column in List III-1 of the materials, Sources and Devices with Special Acceptance Requirements Manual for that paint system.

9.9.2 Any approved paint system may be removed from List III-1 of the Materials, Sources and Devices with Special Acceptance Requirements Manual for any of the following reasons: if variances are found between the original paint used in the field test paint system or if the paint system is found to perform unsatisfactorily in the field.

10. **Contractors' Requirements:** The prime contractor will be responsible for purchasing and using only approved products.

10.1 Advising the project engineer of the system selected for maintenance projects, and the Bridge Engineer for projects using newly fabricated steel.

10.2 Cleaning, storing, and applying these coatings according to Department specifications and Manufacturers recommendations.

11. **Removal of Products:** Products may be removed from this list for any of the following:

11.1 Mislabeling products or substitution of products other than those originally submitted.

11.2 Failure to comply with any of the Department's requirements for this type of material.

11.3 Failure to work satisfactorily on the job.

12. **Correspondence:** All correspondence concerning this list should be directed to the following:
Product Evaluation Board
Alabama Department of Transportation
3704 Fairground Road
Montgomery, AL 36110